

# PATENT COOPERATION TREATY

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## INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Article 36 and Rule 70)

Applicant's or agent's file reference 30A-90 023	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP 03/06485	International filing date (day/month/year) 18.06.2003	Priority date (day/month/year) 18.06.2003
International Patent Classification (IPC) or both national classification and IPC H04B1/707		
Applicant TELEFONAKTIEBOLAGET LM ERICSSON (PUBL) et al.		

1. This International preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.


2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand  11.01.2005	Date of completion of this report  26.09.2005
Name and mailing address of the International preliminary examining authority:   European Patent Office - Gitschiner Str. 103 D-10958 Berlin Tel. +49 30 25901 - 0 Fax: +49 30 25901 - 840	Authorized Officer  Feng, M  Telephone No. +49 30 25901-495



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/EP 03/06485**

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-15 as originally filed

**Claims, Numbers**

1-14 received on 29.06.2005 with letter of 29.06.2005

**Drawings, Sheets**

1/5-5/5 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
  - ☐ the language of publication of the international application (under Rule 48.3(b)).
  - ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:
- ☐ contained in the international application in written form.
  - ☐ filed together with the international application in computer readable form.
  - ☐ furnished subsequently to this Authority in written form.
  - ☐ furnished subsequently to this Authority in computer readable form.
  - ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
  - ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY  
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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1-14
	No: Claims	
Inventive step (IS)	Yes: Claims	1-14
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-14
	No: Claims	

2. Citations and explanations

**see separate sheet**

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

- 1 The following document (D) is referred to in this communication; the numbering will be adhered to in the rest of the procedure:

D1: US 6 222 875

- 2 The present application does not meet the requirements of Article 33(1) PCT, because the subject-matter of claims 1-14 does not involve an inventive step in the sense of Article 33(3) PCT.

- 2.1 Document D1, which is considered to represent the most relevant state of the art, discloses (the references in parentheses applying to this document)

a method of despreading a multicode signal that has been generated using two or more spreading codes with different spreading factors (col. 2, lines 4-14), comprising - subjecting the signal to a first despreading step ~~that includes a first Fast Hadamard Transform~~ to jointly despread the spreading codes that employ the different spreading factors, wherein, during the first despreading step despreading is performed by a factor lower than or equal to the lowest spreading factor so that one or more spreading codes are despread only partially (col. 5, lines 37-53); and - subjecting the signal or a signal portion including one or more partially despread spreading codes to one or more further despreading steps (Fig. 4, 52).

from which the subject-matter of claim 1 differs in that a Fast Hardamard Transform is included in the first despreading step. However, using Fast Hadamard Transform as despreading circuit is well-known to a skilled person. Thus, the subject-matter of claim 1 cannot be regarded as inventive.

- 2.2 Similar reasoning applies to independent claims 13 and 14 which are corresponding

claims in another category.

- 2.3 Dependent claims 2-12 do not appear to contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT with respect to inventive step, the reasons being as follows:

The additional features of claims 2, 3 are disclosed in D1 (Fig. 4; col. 5, lines 37-53);  
The additional features of claims 4-12 are merely design options.

- 3 At the time being it seems that none of the claims could be patentable.

- 1 -

1. A method of despreading a multicode signal that has been generated using two or more spreading codes with different spreading factors, comprising:
  - subjecting the signal to a first despreading step that includes a first Fast Hadamard Transform (FHT) to jointly despread the spreading codes that employ the different spreading factors, wherein, during the first despreading step, despreading is performed by a factor lower than or equal to the lowest spreading factor so that one or more spreading codes are despread only partially; and
  - subjecting the signal or a signal portion including one or more partially despread spreading codes to one or more further despreading steps.
2. The method of claim 1, wherein the despreading steps are performed in a cascaded manner.
3. The method of claim 1 or 2, wherein the dimension of the first FHT corresponds to the lowest spreading factor.
4. The method of one of claims 1 to 3, wherein the first despreading step further includes a permutation operation.
5. The method of one of claims 1 to 4, wherein one or more of the despreading steps include a serial-to-parallel conversion.
6. The method of one of claims 1 to 5, wherein the one or more further despreading steps include at least one of a decimating operation, a summation operation, a further FHT, and a multiplication operation.
7. The method of step 6, wherein the decimating operation includes distributing a sequence of input samples according to a predefined distribution scheme over two or more signal branches.
8. The method of claim 7, wherein in each signal branch a summation operation is performed and the outputs of the summation operations are used as input for a second FHT.

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9. The method of one of claims 1 to 8, wherein the one or more further despreading steps include a multiplication operation that is followed by a summation operation.

5 10. The method of one of claims 1 to 9, wherein the one or more further despreading steps includes a summation operation followed by a second FHT.

11. The method of one of claims 1 to 10, wherein at least the first FHT is configured as a FHT with reduced operations.

10 12. The method of claims 1 to 11, wherein during the first despreading step, despreading is performed by a factor equal to the lowest spreading factor so that at least one spreading code is despread completely whereas other spreading codes are despread only partially and wherein the method includes  
15 the additional step of outputting any informational data streams that had been spread with any spreading codes that are completely despread.

20 13. A despreading component (38) for despreading a multicode signal that has been generated using two or more spreading codes with different spreading factors, comprising:  
- a first despreading stage (40) for performing a first despreading step that includes a first Fast Hadamard Transform (FHT) to jointly despread the spreading codes that employ the different spreading factors, wherein during  
25 the first despreading step despreading is performed by a factor lower than or equal to the lowest spreading factor so that one or more spreading codes are despread only partially; and  
- at least a second despreading stage (42) for performing one or more further despreading steps with respect to the signal or a signal portion that includes one or more partially despread spreading codes.

30 14. A receiver for wireless communications including the despreading component (38) of claim 12 .